

**MULTIMEDIA**



**UNIVERSITY**

**STUDENT IDENTIFICATION NO**

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# **MULTIMEDIA UNIVERSITY**

## **FINAL EXAMINATION**

**TRIMESTER 2, 2018/2019**

### **BDM1024 – DATABASE MANAGEMENT SYSTEMS**

**(All Section / Groups)**

**11 MARCH 2019**  
**2.30 p.m. – 4.30 p.m.**  
**(2 Hours)**

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#### **INSTRUCTIONS TO STUDENT**

1. This Question paper consists of 6 pages with 4 Questions only (including cover page).
2. Attempt **ALL FOUR** questions.
3. The distribution of the marks for each question is given.
4. Please write all your answers in the Answer Booklet provided.

Attempt **ALL FOUR** questions.

### **QUESTION 1**

- a) Prior to the advent of databases, data was stored in individual files, each being used by a separate program. This was the traditional file processing approach to data storage. As business applications became more complex, it became evident that traditional file processing systems had a number of shortcomings and limitations. List down and explain any **FOUR (4)** disadvantages of file processing.

(12 marks)

- b) Differentiate between database and Database Management System(DBMS).

(7 marks)

- c) There are many advantages of databases over the traditional files. List down and explain any **THREE (3)** of them.

(6 marks)

(Total 25 marks)

### **QUESTION 2**

Design an Entity Relationship Model for the following situation below. In cases where the below requirement specification is ambiguous, state clearly the assumptions which you have made for justifying your modeling choices.

Projects, Inc., is an engineering firm with approximately 500 employees. A database is required to keep track of all employees, their skills, projects assigned, and departments worked in. Every employee has a unique number assigned by the firm and is required to store his or her name and date of birth. If an employee is currently married to another employee of Projects, Inc., the date of marriage and who is married to whom must be stored; however, no record of marriage is required if an employee's spouse is not also an employee. Each employee is given a job title (e.g., engineer, secretary, and so on). An employee does only one type of job at any given time, and we only need to retain information for an employee's current job. There are 11 different departments, each with a unique name. An employee can report to only 1 department. Each department has a phone number.

To procure various kinds of equipment, each department deals with many vendors. A vendor typically supplies equipment to many departments. We are required to store the name and address of each vendor and the date of the last meeting between a department and a vendor. Many employees can work on a project. An employee can work on many projects (e.g., Southwest Refinery, California Petrochemicals, and so on) but can only be assigned to at most one project in a given city. For each city, we are interested in its state and population.

An employee can have many skills (preparing material requisitions, checking drawings, and so on), but she or he may use only a given set of skills on a particular project. (For example, an employee MURPHY may prepare requisitions for the Southwest Refinery project and prepare requisitions as well as check drawings for California Petrochemicals.) Employees use each skill that they possess in at least one project. Each skill is assigned a number, and we must store a short description of each skill. Projects are distinguished by project numbers, and we must store the estimated cost of each project.

Following are the distribution of marks

- a) Correct identification of Entity with its attributes mark. (6 marks)
- b) Correct identification of Primary Key. (6 marks)
- c) Correct identification of cardinalities and relationship types. (8 marks)
- d) Correct identification of Associative Entity with its attributes. (2 marks)
- e) Correct identification of attributes on relationship. (2 marks)
- f) Correct identification of multivalued attribute. (1 mark)

(Total 25 marks)

### **QUESTION 3**

Given a sample **Player details** form for a **Sports Recreation Club**. This form use to record down the details of players and the games played, together with their payment details. Examine the player detail form as shown below and answer the following questions:

**Player Details Form**

Player #: P0001

Contact number: 0167676543

Address: 25 Mount Rd. Charles Street UAE

Player Name: Rina

Game Id	Game Description	Venue	Time	Day	Trainer #	Name
G001	Soccer	Court A	9:00 am	Mon	T044	Mr. Henry
G002	Rugby	Court C	5:00 pm	Wed	T121	Mr. Tan
G235	Badminton	East Room	2:30 pm	Sat	T343	Ms. Jenn
G123	Swimming	Pool 1	6:00 pm	Sat	T234	Mr. Ray

\*\*\*\*\***PAYMENT DETAILS**\*\*\*\*\*

Payment Ref No: R044

Payment type: Cash/Credit Card

Payment Date: 01st. February 2019

Amount Paid: RM 200.00

Describe and illustrate the process of normalizing the data for the Millennium College class list to First Normal Form (1NF), Second Normal Form (2NF) and Third Normal Form (3NF).

Following are the distribution of marks

- a) Explain **THREE (3)** types of anomalies. (6 marks)
- b) Each rule of normal form with the rule stated. (3 marks)
- c) Results of First Normal Form. (4 marks)
- d) Results of Second Normal Form. (4 marks)
- e) Results of Third Normal Form. (8 marks)

(Total 25 marks)

**QUESTION 4**

a) Given the following relations, generate SQL statements for the following queries.

**STUDENT** (StudentID, StudentName)

<u>StudentID</u>	StudentName
38214	Letersky
54907	Altvater
66324	Aiken
70542	Marra

**FACULTY** (FacultyID, FacultyName)

<u>FacultyID</u>	FacultyName
2143	Birkin
3467	Berndt
4756	Collins

**COURSE** (CourseID, CourseName)

<u>CourseID</u>	CourseName
ISM3113	System Analysis
ISM3112	System Design
ISM4212	Database
ISM4930	Networking

**REGISTRATION** (StudentID, SectionNo)

<u>StudentID</u>	<u>SectionNo</u>
38214	2714
54907	2714
54907	2715
66324	2713

**QUALIFIED** (FacultyID, CourseID, DateQualified)

<u>FacultyID</u>	<u>CourseID</u>	DateQualified
2143	ISM3112	9/2005
2143	ISM3113	9/2005
3467	ISM4212	9/2012
3467	ISM4930	9/2013
4756	ISM3113	9/2008
4756	ISM3112	9/2008

- i. Which students have an ID number that is less than 50000?  
(3 marks)
- ii. What is the name of the faculty member whose ID is 4756?  
(3 marks)
- iii. What is the smallest section number used in the first semester of 2015?  
(3 marks)
- iv. How many students are enrolled in Section 2714 in the first semester of 2015?  
(3 marks)
- v. Which faculty members have qualified to teach a course since 2008? List the faculty ID, course, and date of qualification.  
(4 marks)
- b) Given the following relations, write **SQL data definition commands** for each of the following queries.
- FLIGHT** (FlightID, FlightName, Staff ID)  
**PASSENGER** (FlightID, PassengerID, PassengerName)  
**STAFF** (StaffID, StaffName, Contact No)
- i. How would you add an attribute FlightType to the Flight table?  
(3 marks)
- ii. How would you remove the Staff table?  
(2 marks)
- iii. How would you change the Contact No field from 10 characters to 20 characters?  
(4 marks)
- (Total 25 marks)

End of Page

